Name:

at1119paper: Complete the Square, $b =$ odd (v506)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 47x = -370$$

Add $\left(\frac{-47}{2}\right)^2$, which equals $\frac{2209}{4}$, to both sides of the equation.

$$x^2 - 47x + \frac{2209}{4} = \frac{729}{4}$$

Factor the left side.

$$\left(x + \frac{-47}{2}\right)^2 = \frac{729}{4}$$

Undo the squaring.

$$x + \frac{-47}{2} = \frac{-27}{2} \quad \text{or} \quad x + \frac{-47}{2} = \frac{27}{2}$$
$$x = \frac{47 - 27}{2} \quad \text{or} \quad x = \frac{47 + 27}{2}$$
$$x = 10 \quad \text{or} \quad x = 37$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 + 59x = 936$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 + 35x \;=\; -196$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 - 19x \;=\; 330$$